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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,065	06/15/2005	Teodor Aastrup	69501-79362	4263

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ALBIHNS AB
BOX 5581
Valhallavagen 117
STOCKHOLM, SE-114 85
SWEDEN

EXAMINER	
HYUN, PAUL SANG HWA	
ART UNIT	PAPER NUMBER
1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/539,065	AASTRUP ET AL.	
	Examiner	Art Unit	
	PAUL S. HYUN	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-47* is/are pending in the application.

4a) Of the above claim(s) *15-31,42,44,45 and 47* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-5,7,8,13,14,32-41,43 and 46* is/are rejected.

7)☒ Claim(s) *6 and 9-12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/15/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of claims 2-14, 32-41, 43 and 46 in the reply filed on June 2, 2009 is acknowledged. It should be noted that the restriction requirement erroneously included claim 1 in the elected claim group even though claim 1 was cancelled by the preliminary amendment filed by Applicant on June 15, 2005. In summary, claims 15-31, 42, 44, 45, and 47 are withdrawn from further consideration by the Examiner. Claims 2-14, 32-41, 43 and 46 will be examined on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims **13 and 39** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "the sample providing part". There is insufficient antecedent basis for this limitation in the claim.

The language of the limitation "in which the extensions the inlet and outlet fluid channels are arranged" in claim 39 is unclear. It is unclear what the limitation is trying to convey.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

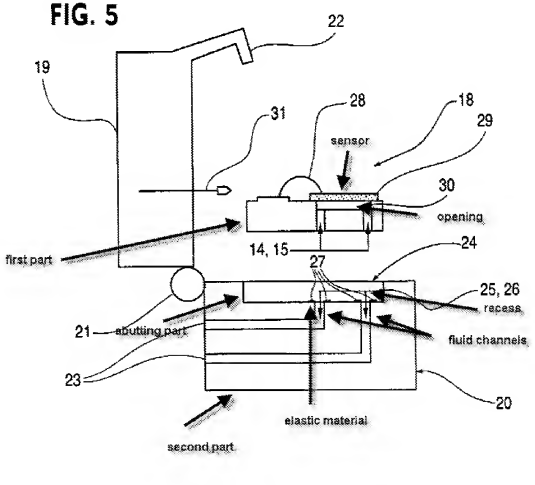
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **2, 5, 7, 8, 14, 32, 35, 38-40 and 43** are rejected under 35 U.S.C. 102(b) as being anticipated by Kösslinger et al. (US 6,196,059 B1).

Kösslinger et al. disclose a quartz crystal microbalance (QCM) gas sensor (see Fig. 5).

FIG. 5



The sensor of the first part of the sensor comprises a piezoelectric quartz crystal, the lower side of which is coated with gold (see lines 1-5, col. 7). In addition, the sensor comprises a signal source as well as a measuring device (see Abstract).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims **3, 4, 33 and 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kösslinger et al. in view of Ganter (US 4,548,514).

Kösslinger et al. do not disclose the hardness of the elastic sealing material.

Ganter discloses an elastic sealing material in the form of an O-ring having a Shore hardness of the order of 50 to 60 (see lines 1-5, col. 5). The reference discloses that such hardness provides liquid-tight seal while providing flexibility in the form of compression (see line 68, col. 4). In light of the disclosure of Ganter, it would have been obvious to one of ordinary skill in the art to use a material having Shore hardness in the order of 50 to 60 to make the elastic material disclosed by Kösslinger et al.

Claim **41** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kösslinger et al. in view of Sheffler (US 4,569,438).

Kösslinger et al. do not disclose the material from which the elastic material is made.

Sheffler discloses an elastic gasket for providing a fluid tight seal between a lid and a container wherein the gasket is made from polyurethane (see line 63, col. 4). In light of the disclosure of Sheffler, it would have been obvious to one of ordinary skill in the art to make the elastic material disclosed by Kösslinger et al. out of polyurethane.

Claims **2, 5, 7, 8, 14, 32, 35, 38-40 and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tom (US 6,029,500) in view of Kösslinger et al.

Tom discloses a QCM sensor comprising a first part 152, a second part 160, and an electronics module 166 (see Fig. 1). The first part comprises a pair of holes for receiving a sensor element 154 wherein the sensor element comprises a piezoelectric quartz crystal 300 coated with conductive metal 306 and 308 (see Fig. 4). The second

part 160 comprises an inlet channel 164, an outlet channel opposite the inlet channel, and a recess at the top for accommodating the first part 152 and the piezoelectric element. The device disclosed by Tom differs from the claimed invention in that Tom does not disclose an elastic material that provides a seal between the first part and the second part.

Kösslinger et al. disclose a QCM sensor comprising a base having fluid channels formed therein, and a piezoelectric quartz crystal sensor wherein the base comprises an opening for accommodating the sensor for communicating the sensor with the fluid channels (see above for more detailed description). The base comprises an elastic material 27 that provides a seal between the fluid channels formed in the base and the piezoelectric element. In light of the disclosure of Kösslinger et al., it would have been obvious to one of ordinary skill in the art to provide an elastic material between the first part 152 and the second part 160 of the device disclosed by Tom to provide a fluid-tight seal.

Claims **36, 37 and 46** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tom in view of Kösslinger et al. as applied to claims 2, 5, 7, 8, 14, 32, 35, 38-40 and 43 above, and further in view of Caron et al. (US 5,992,215).

Neither Tom nor Kösslinger et al. disclose the dimensions of the recess formed in the base for accommodating the piezoelectric element. Caron et al. disclose a QCM sensor wherein the thickness of the piezoelectric element ranges from 0.1 mm to 1 mm (see line 31, col. 3). In light of the disclosure of Caron et al., it would have been obvious

to one of ordinary skill in the art to dimension the recess of the modified Tom device such that the depth/width of the recess in the base ranges between 0.1 and 1 mm. A recess having such dimensions would properly accommodate the piezoelectric element.

Allowable Subject Matter

Claims 6 and 9-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Kösslinger et al. and Tom both disclose a QCM sensor comprising multiple parts that are assembled together. Both devices comprise an electrode-coated piezoelectric element that is accommodated by a base having fluid channels formed therein. However, neither reference discloses the elements recited in the allowable claims that actuate the device between a first position and a second position. Specifically, neither reference discloses guide rods (claim 6) nor handle-operated threads (claims 9 and 10) that move the base with respect to the piezoelectric element between two positions. In addition, the cited references do not disclose electrical contact areas as recited in claims 11-13.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL S. HYUN whose telephone number is (571)272-8559. The examiner can normally be reached on Monday-Friday 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Paul S Hyun/
Examiner, Art Unit 1797

/Jill Warden/
Supervisory Patent Examiner, Art Unit 1797